CHM151 Quiz 3 25 Pts Spring 2014 Name: _____
Due: Wednesday February 19th Show all work to receive credit.

1.(3 Pts) Name and give the formulas for six *strong acids*.

2.(1 Pt) Give an example of a *triprotic acid*. _____

3.(1 Pt) Batteries in our cars generate electricity by the following chemical reaction.

$$Pb + PbO_2 + 2H_2SO_4 \rightarrow 2PbSO_4 + 2H_2O$$

What is the *reducing agent* in this process?

4.(3 Pts) The solubility of $Ba(NO_3)_2$ is 130.5 grams per liter at 0°C. How many moles of dissolved salt are present in 4.0 liters of a saturated solution of $Ba(NO_3)_2$ at 0°C? Show work.

5.(4 Pts) What is the molar concentration of chloride ions in a solution prepared by mixing 100. mL of 2.0 M KCl with 50. mL of a 1.5 M $CaCl_2$ solution? Show work.

6.(2 Pts) What volume of concentrated nitric acid (15.0 M) is required to make 100. mL of a 3.0 M nitric acid solution? Show work

7.(2 Pts) How many grams of lithium nitrate, $LiNO_3$ (68.9 g/mol), are required to prepare 474.2 mL of a 0.352 *M* $LiNO_3$ solution? Show work

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8. (2 Pts) What mass of H_3PO_4 (98 g/mol) is present in 93.7 L of a 0.0557 *M* solution of H_3PO_4?
Show work

9.(3 Pts) The reaction of HCl with NaOH is represented by the equation
$HCl(aq) + NaOH(aq) \rightarrow NaCl(aq) + H_2O(l)$
What volume of 0.201 *M* HCl is required to titrate 31.4 mL of 0.485 *M* NaOH? Show work

10.(4 Pts) In a volumetric analysis experiment, a solution of sodium oxalate ($Na_2C_2O_4$) in acidic solution is titrated with a solution of potassium permanganate ($KMnO_4$) according to the following balanced chemical equation:
$2KMnO_4(aq) + 8H_2SO_4(aq) + 5Na_2C_2O_4(aq) \rightarrow 2MnSO_4(aq) + 8H_2O(l) + 10CO_2(g) + 5Na_2SO_4(aq) + K_2SO_4(aq)$
What volume of 0.0123 *M* $KMnO_4$ is required to titrate 0.140 g of $Na_2C_2O_4$ dissolved in 40.0 mL of solution? Show work